# SEMICONDUCTOR DEVICE AND MAKING THEREOF


Abstract of the Disclosure

By forming a conductive smoothing layer over the bottom electrode and/or a capacitor dielectric, a MIM capacitor with improved reliability due to reduction of geometrically enhanced electric fields and electrode smoothing is formed. In one embodiment, layer including a refractory metal or a refractory metal-rich nitride, is formed over a first capping layer formed of a refractory nitride. In addition, a second refractory metal or a refractory metal-rich nitride layer may be formed on the capacitor dielectric. The smoothing layer could also be used in other semiconductor devices, such as transistors between a gate electrode and a gate dielectric.

(FIG. 9 to accompany abstract.)